WHAT IS CLAIMED IS:

1. A method of affecting thermoacoustic oscillations in a combustion system (1) comprising at least one burner (2) and at least one combustor (3), modulated injection of fuel being carried out, characterized in that the modulated injection of the fuel is carried out into a recirculation zone (7) which forms in the combustor (3).

2. The method as claimed in claim 1, characterized in that the injection of the total quantity of fuel is carried out in such a way that a first quantity of fuel is injected at a constant rate and a second quantity of fuel is injected in a modulated manner.

3. The method as claimed in claim 2, characterized in that the quantity of fuel injected in a modulated manner is smaller than the quantity of fuel injected at a constant rate.

4. The method as claimed in claim 2 or 3, characterized in that the quantity of fuel injected in a modulated manner is approximately between 6% and 1% of the total quantity of fuel.

5. The method as claimed in one of claims 1 to 4, characterized in that the modulated injection of the fuel is carried out independently of an oscillation phase of the thermoacoustic oscillations.

6. The method as claimed in one of claims 1 to 4, characterized in that the modulated injection of the fuel is coupled to an oscillation phase of the thermoacoustic oscillations.

7. The method as claimed in one of claims 1 to 6, characterized in that the modulated injection of the fuel is carried out exclusively into the recirculation zone (7).

8. The method as claimed in one of claims 1 to 7, characterized in that the injection of fuel into the recirculation zone (7) is carried out exclusively in a modulated manner.

9. A device for affecting thermoacoustic oscillations in a combustion system (1) comprising at least one burner (2) and at least one combustor (3), the burner (2) having at least one fuel supply device (11) with at least one fuel valve (24) for producing modulated injection of the fuel, characterized in that the fuel supply device (11) has at least one lance (12) projecting into the burner (2) for the modulated injection of the fuel into a recirculation zone (7) that forms in the combustor (3).

10. The device as claimed in claim 9, characterized in that the lance (12) is arranged coaxially with respect to a longitudinal mid-axis (20) of the burner (2).

11. The device as claimed in claim 9 or 10, characterized in that the lance (12) injects the fuel into the recirculation zone (7) substantially axially.

12. The device as claimed in one of claims 9 to 11, characterized in that a control system (23) for actuating the fuel valve (24) controlling the fuel supply of the lance (12) has an open control loop which contains a control signal generator (26) which generates a control signal for actuating the

fuel valve (24) independently of the current thermoacoustic oscillations.

13. The device as claimed in claim 12, characterized in that the open control loop contains a signal amplifier (27) which passes on the control signal generated by the signal generator (26) in amplified form to the fuel valve (24).

14. The device as claimed in one of claims 9 to 11, characterized in that a control system (28) for actuating the fuel valve (24) controlling the fuel supply of the lance (12) has a closed control loop which contains a control signal generator (29) which generates a control signal for actuating the fuel valve (24) as a function of an oscillation signal correlating with the current thermoacoustic oscillations.

15. The device as claimed in claim 14, characterized in that the closed control loop contains sensors for generating the oscillation signal and/or a filter (30) for noise suppression in the control signal and/or a time delay element (31) for the phase shifting of the control signal and/or a signal amplifier (32) for amplifying the control signal before it passes to the fuel valve (24).